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**Drop side cot mechanisms**

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# COMPLETE SPECIFICATION

## FOR A STANDARD PATENT

ORIGINAL



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Invention Title: **DROP SIDE COT MECHANISMS**

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The following statement is a full description of this invention, including the best method of performing it known to us

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### DROP SIDE COT MECHANISMS

The present invention relates to tracking systems and/or mechanisms for the drop side of cots of a kind having a drop side, to drop side assemblies having such tracking system(s) or mechanism(s) and to the overall cot as well as related means and methods.

5 In relation to the provision of a drop side of a cot there is a marketing and use advantage in having a capability of single hand raising and lowering of the drop side but still requiring a double action to allow movement from the "up" condition into the "down" condition but one which is easily achievable (at preferably no danger (eg. finger entrapment) to a child in the cot) by a parent or other person outside of the cot.

10 Cots having a drop side are well known. See for example New Zealand Patent Specification No. 124815 and NZ Registered Design Nos. 21546 and 22676.

The present invention recognises a desirability of preferably providing a tracking system having a variety of track assemblies or members. Each of those advantageously can be included in the "jambs" of the drop side (e.g. the legs thereof at each end of the  
15 drop side) so as to stably support the drop side in its reproducible movements between the various conditions. Nevertheless such assemblies or mechanisms provide the facility whereby a simple application of pressure against the lower region of the drop side (for example centrally thereof) will provide one of the two actions needed for the release of the drop side from the "up" condition into the down condition, the other  
20 motion being a slight raising of the drop side before it can then fall or move or be moved to the "down" condition. It is to this that the present invention relates.

Accordingly in a first aspect the present invention consists in a **tracking system for or of the drop side of a cot**, said system having at least one protuberant member of the drop side (or the *vice versa* arrangement) guided or guidable within a track  
25 (herein "the track") which allows substantially reproducible movements of the drop side in conjunction with other track/protuberance tracking inter-engagement (whether of the same kind or of a mirrored kind or of a different kind), the track

(i) allowing a substantially vertical rising of the substantially horizontally extending protuberant member in a rising section of the track to the entrance of a  
30 dropping section (preferably blind) of the track into which it can move downwardly, the drop side then being supported directly or indirectly in its "up" condition, and

(ii) allowing a substantially vertical rising of said protuberant member within said dropping section of the track as the drop side is lifted and a forcing of the protuberant member against biasing means (for example by the application of an inward pressure on the lower region of the drop side) into an upper region of said rising section of the track (i.e. from which it may have entered the dropping section as in (i)) down  
5 which the protuberant member can then move until said drop side is in its "down" condition.

Preferably the means defining the track is a member or assembly fitted into the jamb or leg of the cot.

10 Preferably the protuberant member(s) of preferably a pair of such tracking systems (one at each end of the drop side) supports the drop side in one or both of the "up" and "down" conditions preferably in conjunction with (other) drop side supporting abutment(s).

15 Preferably the track is defined by at least one moulding and said biasing means is a spring or other resilient structure which will prevent an easy entrance of the protuberant member from the dropping section into the rising section of the track so that even should a child lift the drop side until such time as there is an application of an inward pressure on a lower region of the drop side there is little prospect of the drop side being lowered.

20 Preferably the track arrangement is such that a lower region of said rising section is substantially vertically aligned below said dropping section yet the rising section moves away from the substantially vertical alignment with said dropping section of the track yet nevertheless allows a smooth guiding of the protuberant member to the entrance of said dropping section of the track, preferably upon some displacement  
25 resiliently of said biasing means.

Preferably the arrangement is substantially as hereinafter described with reference to any of the accompanying drawings.

30 Reference herein to "inwards" and "outwards" with respect to the application of pressure or force on (the lower region of) the drop side should not be interpreted as meaning that the force must necessarily be of a kind that might, for convenience, be applied by the knee of a parent or other caregiver, for example, with a knee against the

lower central region of the drop side. In less preferred forms of the present invention an outward pulling of the drop side could instead be utilised using the same tracking system although this is much less desirable as it does not lend itself as readily to one handed operation.

- 5 In still a further aspect the present invention consists in **a drop side assembly of a cot** which includes at least two (preferably four) protuberant members that project from said drop side, (preferably two at each end thereof and one above the other) (there being a tracking system as previously defined for each of the lower two protuberant members) one at each end and with the tracks arranged substantially as a mirror image  
10 of the other and wherein the upper protuberant member at each end is received and reproducibly guidable within a different track to that of the track (for example, a simple vertical track).

Preferably the arrangement of the track or the upper track just referred to is of any of the kinds hereinafter described.

- 15 Whilst in preferred forms of the present invention there are two protuberant members at each end of the drop side in less preferred forms the track(s) rather than the protuberant member(s) may be on the drop side itself. Hybrids of such arrangements are also contemplated.

- 20 In still a further aspect the present invention consists in **a cot** which includes at least one tracking system in accordance with the present invention or which includes a drop side assembly as previously defined.

- In yet a further aspect the present invention consists in **a method of forming the track for a tracking system** in accordance with the present invention which comprises moulding an integral structure and engaging therewith resilient means to thereby define  
25 an assembly which in conjunction with a protuberant member of a drop side (or the *vice versa* arrangement) will provide a tracking system as previously defined.

Preferably said track assembly is of a kind hereinafter described.

- In still a further aspect the present invention consists in **a track assembly** suitable for providing a tracking system as previously defined and/or substantially as  
30 hereinafter described with or without reference to any one or more of the accompanying drawings.

In yet a further aspect the present invention consists in the use of the apparatus, assemblies or systems of the present invention.

A preferred form of the present invention will now be described with reference to the accompanying drawings in which;

5 Figure 1 is a view of the inside of the leg or jamb of a drop side cot, the vertically extending broken line indicating the centre line of a drop side (not shown) but which has at each end thereof an upper and lower protuberant member of a kind such as shown in Figures 2 and 3, each of which is received within a track provided in the jamb, preferably the mattress support of the cot being on the side shown by the broken lines  
10 to the right, i.e. the inward direction,

Figure 2 shows a protuberant member of a kind previously mentioned, each of which is receivable within the tracking channel, groove or the like of the upper track mechanism shown in Figure 1 (preferably a straight vertical track) or within the more complex tracking arrangement which provides the two movement requirement for  
15 preventing easy operation of the drop side from the up condition to the down condition by a child,

Figure 3 is a view EE with respect to Figure 2,

Figure 4 is an enlarged view of the upper region of the track of a tracking system in accordance with the present invention, the arrow showing the preferred inward  
20 direction, the track having the dropping region with its entrance at least partly blocked by a spring or other resilient member (biasing means) against which the protuberant member of Figures 2 and 3 can be forced to move, i.e. from the rising section into the dropping section and *vice versa*, the lower regions of the rising section being aligned more or less vertically below the dropping section such that the lower region of the drop  
25 side when being lifted to have its protuberant member (shown in Figures 2 and 3) move past the spring is assisted not only by the spring or other biasing means into the dropping section of the track but also by gravity acting on the arc of movement favoured by gravity, the upper protuberant members of the drop side being constrained to the centre line depicted in Figure 1,

30 Figure 5 is a view of a preferred track forming member (preferably of plastics and of unitary form) as in Figures 1 and 4 but not showing the spring fitted thereto,

Figure 6 is the reverse view of the member shown in Figure 5 but with a spring fitted thereto,

Figure 7 is a view AA with respect to Figure 5,

Figure 8 is an end view of the arrangement shown in Figure 6 from the direction  
5 BB but with the spring removed,

Figure 9 is an enlargement of the projection formed preferably as part of the moulded track forming moulding as depicted in Figure 7 but which (as shown in Figures 1, 4 and 6) are to mount the spring (see also Figure 12), the view being of the arrangement as depicted in Figure 6 in direction CC but without the spring,

10 Figure 10 is a view in the direction DD with respect to the moulding of Figure 5,

Figure 11 is a similar view to that of Figure 1 but of a moulding capable of providing the upper track for an upper protuberant member as shown in Figures 2 or 3 of a drop side and which has its preferably vertically extending track provided with an  
15 enlargement at a lower end region thereof to be concealed by the drop side in both the up and down conditions so as to avoid finger entrapment,

Figure 12 is a view FF with respect to Figure 11, and

Figure 13 is a perspective view of an assembly as shown in Figure 4 or Figure 6 showing the arrangement of the preferred biasing means, namely the spring.

20 The present invention includes *vice versa* and hybrid forms but the preferred form has four protuberant members all on the drop side itself.

In the preferred form of the present invention a single moulding 1 can be used to provide the upper track on each of the two jambs 2 of a drop side cot. These upper tracks being symmetrical do not require right or left hand side mirrored versions one of  
25 the other.

The preferred tracking system of the present invention involves the moulding shown as 3 with its guiding channel 4 having a lower region 4A preferably vertically aligned below a dropping section 4B such that an entrance 5 from an upper end of the rising section of the track into the dropping section of the track 4B exists and this is  
30 capable of being resiliently blocked by a spring 6, preferably supported by a projection 7, so as to require spring displacement as the protuberant member 8 moves either way

(via the entrance 5 from 4A to 4B or via the entrance 5 from 4B to 4A).

The operation in use therefor requires knee pressure on the lower central part of the drop side to cause spring 6 displacement and this must occur with the protuberant member 8 and thus the drop side already lift up beyond the condition it assumes in both  
5 the "up" and "down" conditions of the drop side.

For the purposes of this specification, including the claims, the term "comprising" shall be taken to have the meaning "including".

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**THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:**

1. A tracking system for or of the drop side of a cot, said system having at least one protuberant member of the drop side (or the *vice versa* arrangement) guided or guidable within a track (herein "the track") which allows substantially reproducible  
5 movements of the drop side in conjunction with other track/protuberance tracking inter-engagement (whether of the same kind or of a mirrored kind or of a different kind), the track
  - (i) allowing a substantially vertical rising of the substantially horizontally  
10 extending protuberant member in a rising section of the track to the entrance of a dropping section of the track into which it can move downwardly, the drop side then being supported directly or indirectly in its "up" condition, and
  - (ii) allowing a substantially vertical rising of said protuberant member within  
15 said dropping section of the track as the drop side is lifted and a forcing of the protuberant member against biasing means into an upper region of said rising section of the track (i.e. from which it may have entered the dropping section as in (i)) down  
20 which the protuberant member can then move until said drop side is in its "down" condition.
2. A system of claim 1 wherein said dropping section of the track is blind ended.
3. A system of claim 1 or 2 wherein the arrangement is such that said forcing is to  
25 be by the application of an inward pressure on the lower region of the drop side.
4. A system of any one of the preceding claims wherein the means defining the track is a member or assembly fitted into the jamb or leg of the cot.
5. A system of any one of the preceding claims wherein the protuberant member(s)  
of preferably a pair of such tracking systems (one at each end of the drop side) supports  
25 the drop side in one or both of the "up" and "down" conditions preferably in conjunction with (other) drop side supporting abutment(s).
6. A system of any one of the preceding claims wherein the track is defined by at  
least one moulding and said biasing means is a spring or other resilient structure which  
will prevent an easy entrance of the protuberant member from the dropping section into  
30 the rising section of the track so that even should a child lift the drop side until such time as there is an application of an inward pressure on a lower region of the drop side

there is little prospect of the drop side being lowered.

7. A system of any one of the preceding claims wherein the track arrangement is such that a lower region of said rising section is substantially vertically aligned below said dropping section yet the rising section moves away from the substantially vertical alignment with said dropping section of the track yet nevertheless allows a smooth guiding of the protuberant member to the entrance of said dropping section of the track, preferably upon some displacement resiliently of said biasing means.

8. A system of any one of claims 1 to 7 wherein the arrangement is substantially as hereinafter described with reference to any of the accompanying drawings.

9. A tracking system substantially as hereinbefore described with reference to any of the accompanying drawings.

10. A drop side assembly of a cot which includes at least two protuberant members that project from said drop side, (there being a tracking system as claimed in any one of the preceding claims for each of the lower two protuberant members) one at each end and with the tracks arranged substantially as a mirror image of the other and wherein the upper protuberant member at each end is received and reproducibly guidable within a different track to that of the track.

11. An assembly of claim 10 wherein four protuberant members project from said drop side.

12. An assembly of claim 11 wherein there are two protuberant members that project from said drop side at each end of the drop side, one above the other.

13. An assembly of any one of claims 10 to 12 wherein said different track is a simple substantially vertical track.

14. A drop side assembly of a cot substantially as hereinbefore described with reference to any of the accompanying drawings.

15. A cot which includes at least one tracking system in accordance with any one of claims 1 to 9 or which includes a drop side assembly of any one of claims 10 to 14.

16. A method of forming the track for a tracking system in accordance with any one of claims 1 to 9 which comprises moulding an integral structure and engaging therewith resilient means to thereby define an assembly which in conjunction with a protuberant member of a drop side (or the *vice versa* arrangement) will provide a

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tracking system as claimed in any one of claims 1 to 9.

17. A tracking system for or of the drop side of a cot substantially as  
hereinbefore described with reference to the accompanying drawings.

18. A drop side assembly of a cot substantially as hereinbefore described with  
5 reference to the accompanying drawings.

DATED: 25 May 1998

**CARTER SMITH & BEADLE**

Patent Attorneys for the Applicant:

**THE BABY FACTORY (NZ) LIMITED**

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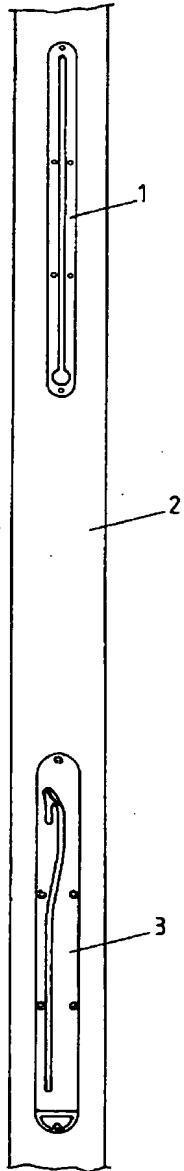


FIG. 1

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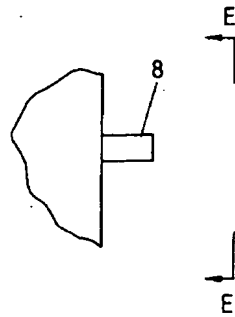


FIG. 2



FIG. 3

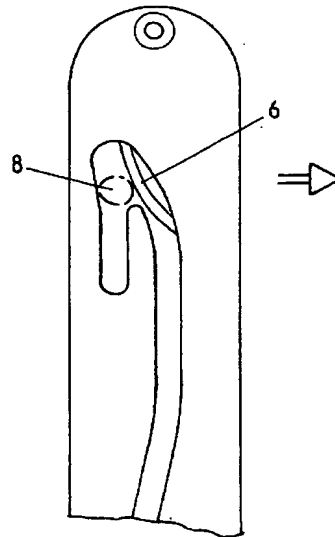


FIG. 4

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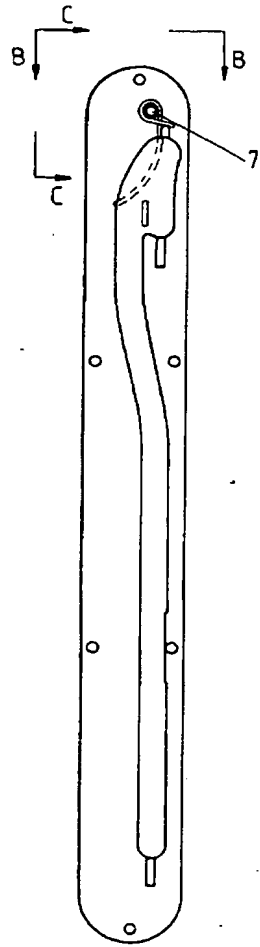


FIG. 6

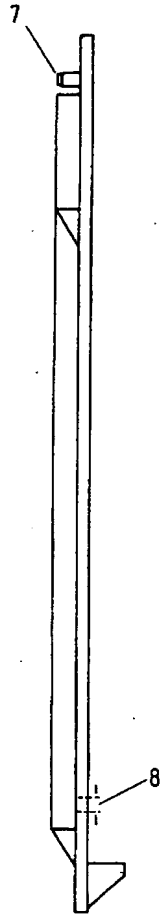


FIG. 7

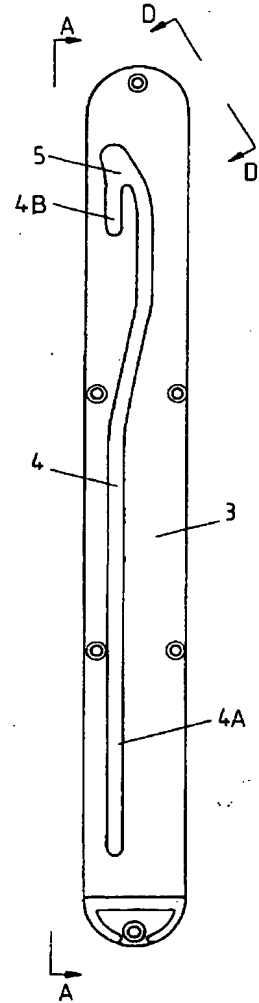


FIG. 5



FIG. 8

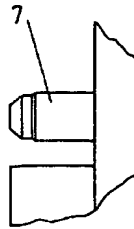


FIG. 9



FIG. 10



FIG. 12

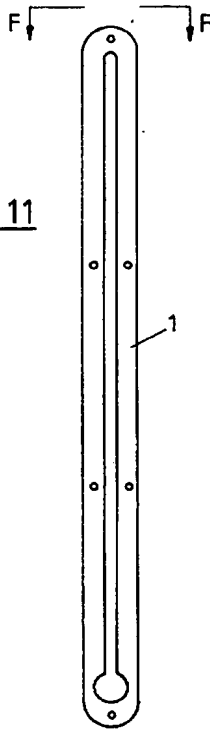


FIG. 11

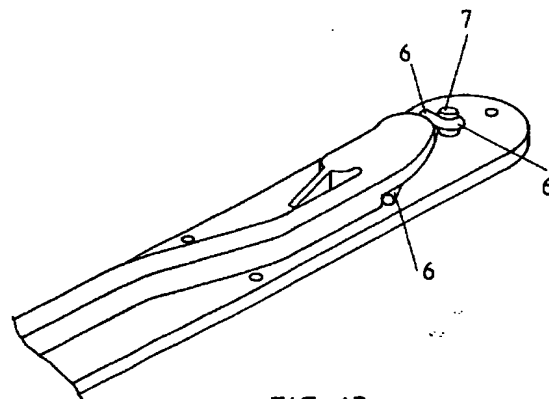


FIG. 13

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